



Aligning the Stars: the Colorado Energy Plan

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Background: Colorado

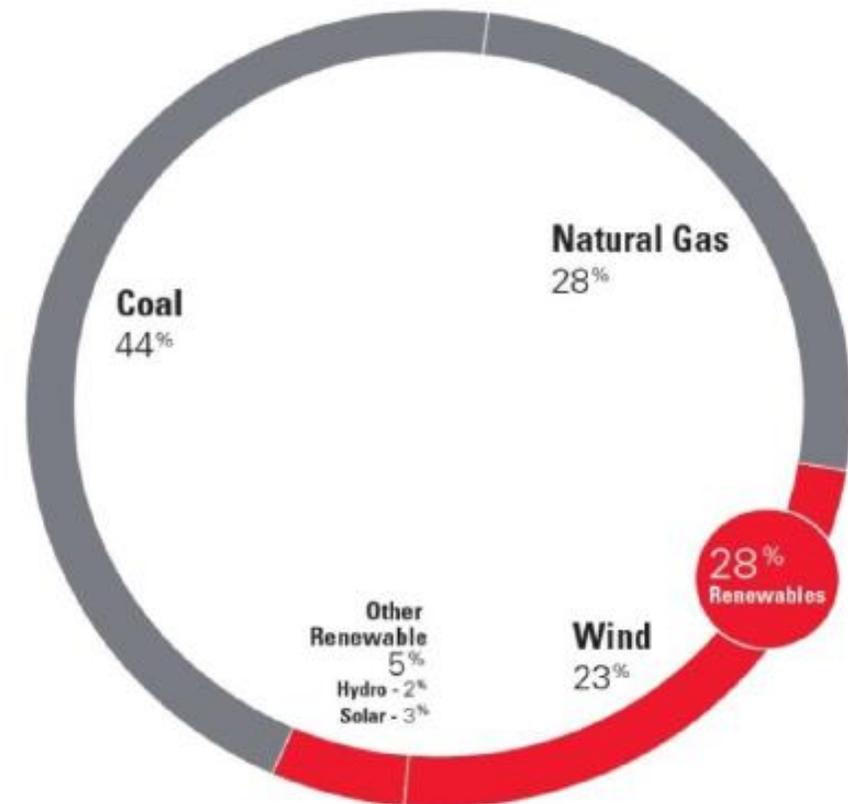
- Rectangle
- Fossil-fuel producing state
- Two vertically integrated investor-owned utilities subject to full regulation
- Largest: Xcel Energy a/k/a Public Service Company of Colorado
- Our Electric Resource Planning Process
 - Phase I / Phase II
 - Focus on Competitive Solicitation
 - Finality, specific bids approved



Xcel's 2016 Electric Resource Plan

- Anticipation going in...
 - Modest resource need,
 - Add some renewables,
 - Try to avoid new gas build,
 - Lay foundation for coal retirements in 2020
- Dispute about evaluating existing resources within the ERP
- \$0/ton assumed carbon cost, with non-zero sensitivities, including Social Cost of Carbon
- Ongoing discussions: how to reduce GHGs consistent with the science?

2017 Colorado Energy Mix



The Stipulation

Key Terms:

- Early Retirement of Comanche Units 1 & 2
- Commitment that plan will “be neutral or result in savings for customers”
- Robust consideration of costs
- Replacement resource ownership targets
 - 50% of renewables
 - 75% of “dispatchable and semi-dispatchable”
- Identified possible resource need of up to 1,100 MW



Diverse support: utility, large customers, consumer advocate, labor organizations, conservation groups, IPP developers, etc.

After filing the Stipulation...

- Commission consideration
 - Need to update any modelling inputs or assumptions?
 - Required presentation of “least cost” Colorado Energy Plan portfolio
- RFP conducted – massive response

BUSINESS

Xcel Energy receives shockingly low bids for Colorado electricity from renewable sources

Solar and wind generation with storage now competitive with coal power



UTILITY DIVE

BRIEF

Xcel solicitation returns 'incredible' renewable energy, storage bids

Robert Walton

By

Published Jan. 8, 2018

The Denver Post file
This is a file photo of Xcel Energy employees working on a utility pole on Stanford Avenue in Englewood.

By **ALDO SVALDI** | asvaldi@denverpost.com | The Denver Post

PUBLISHED: January 16, 2018 at 8:13 pm | UPDATED: February 1, 2018 at 3:13 pm

In Colorado, a glimpse of renewable energy's insanely cheap future

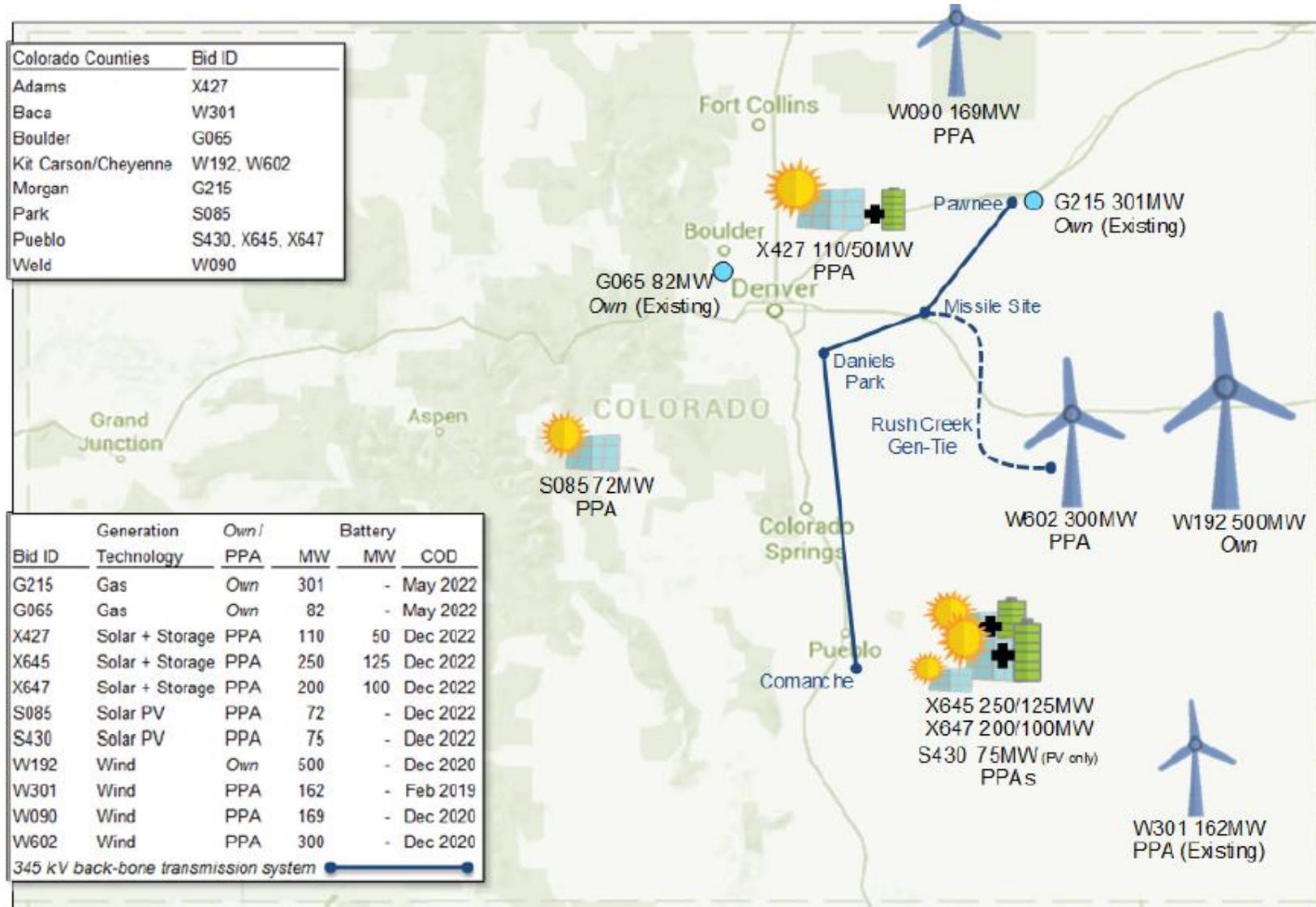
Even with storage, new renewables beat existing coal.

By David Roberts | [@drvox](https://twitter.com/drvox) | david@vox.com | Jan 16, 2018, 2:00pm EST

The Approved Colorado Energy Plan

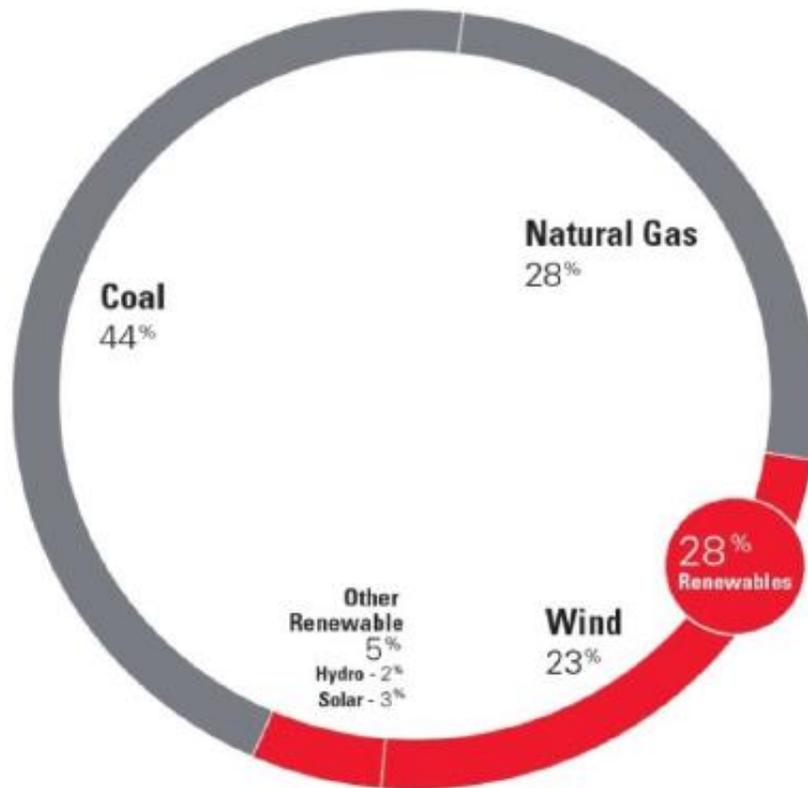
- Resource mix:
 - 1,131 MW wind
 - 707 MW solar
 - 275 MW battery storage
 - 383 MW *existing* gas plants (off-contract)
- Ownership:
 - 58% dispatchable/semi-dispatchable utility-owned
 - 27% renewables utility-owned
- Saves \$213 million PVRR compared to keeping Comanche Units 1 & 2 running.
- When accounting for the societal costs of GHG pollution, the benefits of the CEP are over \$1 billion.
- Significant replacement resources located in Pueblo County (525 MW solar + 225 MW storage), resulting in net tax base benefit to the county.
- Approved in September 2018.

Replacement Resources at a Glance

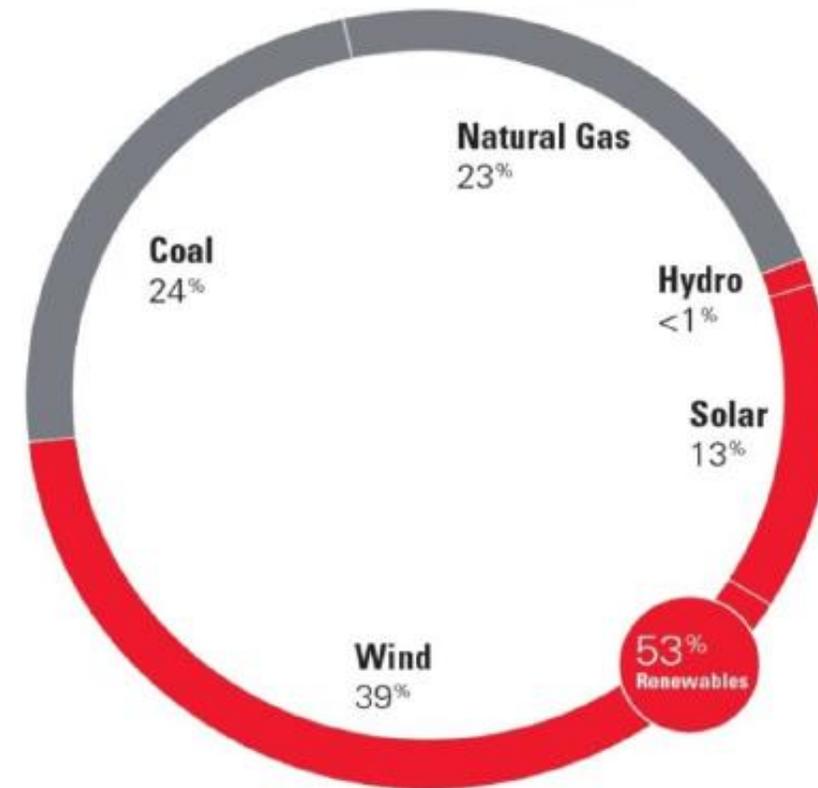


System Transformation

2017 Colorado Energy Mix



2026 Estimated Energy Mix Under The Colorado Energy Plan



Since the Colorado Energy Plan...

- **In December 2018**, Xcel announced a goal to reduce its system-wide carbon pollution 80% by 2030, with a goal of carbon neutrality by 2050.
- **In February 2019**, PUC proposed new rules to require evaluation of existing plants in every ERP
- **As I type this**, Colorado General Assembly is considering legislation that would set economy-wide GHG reduction goals of 50% by 2030 and 90% by 2050; as well as companion legislation that would create a pathway at the PUC for Xcel (and other electric utilities) to reduce emissions even further, consistent with Xcel's announced goals.





Any Questions?

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